What is claimed is:

Fig 6

1. A linear motion mechanism with a supersonic motor comprising:

a supersonic motor for driving a rotor by vibration of a vibrating body having a piezoelectric element;

a cam cooperating with the movement of said rotor;

a moving body operating in a constant direction in response to a rotation of said cam; and

a pressurizing mechanism provided in a part of said moving body for imparting a contact pressure to said cam and said moving body.

Fig 5

2. A linear motion mechanism with a supersonic motor comprising:

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a supersonic motor for driving a rotor by vibration of a vibrating body having a piezoelectric element;

a pinion cooperating with the movement of said rotor;

a moving body having a rack operating in a constant direction in response to a rotation of said pinion; and

a pressurizing mechanism provided in a part of said moving body for imparting a contact pressure to said pinion and said rack.

3. A swing motion mechanism with a supersonic motor comprising:

a supersonic motor for driving a rotor by vibration of a vibrating body having a piezoelectric element;

a cam cooperating with the movement of said rotor;

a moving body operating in a swing motion in response to a

rotation of said cam; and

a pressurizing mechanism provided in a part of said moving body for imparting a contact pressure to said cam and said moving body.

4. The linear motion mechanism with a supersonic motor according to claim 1, characterized in that when said supersonic motor is to be started, said rotor is rotated in advance in a direction so that the pressurizing force of said pressurizing mechanism gives a rotational force to said rotor, or a stationary wave is generated by said vibrating body so that a predetermined operation is performed by said rotor after said rotor has previously been rotated in advance by the pressurizing force of said pressurizing mechanism.

5. The linear motion mechanism with a supersonic motor according to claim 2, characterized in that when said supersonic motor is to be started, said rotor is rotated in advance in a direction so that the pressurizing force of said pressurizing mechanism gives a rotational force to said rotor, or a stationary wave is generated by said vibrating body so that a predetermined operation is performed by said rotor after said rotor has previously been rotated in advance by the pressurizing force of said pressurizing mechanism.

6. The linear motion mechanism with the swing motion mechanism with a supersonic motor according to claim 3, characterized in that when said supersonic motor is to be started, said rotor is rotated in advance in a direction so that the pressurizing force of said pressurizing mechanism gives a rotational force to said rotor, or a stationary wave is generated by said vibrating body

so that a predetermined operation is performed by said rotor after said rotor has previously been rotated in advance by the pressurizing force of said pressurizing mechanism.

7. A linear motion mechanism with a supersonic motor, characterized by comprising: a supersonic motor for driving a rotor by vibration of a vibrating body having a piezoelectric element; a cam or a pinion cooperating with the movement of said rotor; a moving body operating in a constant direction in response to a rotation of said cam or said pinion; a guide portion for guiding the movement of said moving body; and a pressurizing mechanism provided on an extension line of said guide portion for imparting a contact pressure to said cam or said pinion and to said moving body.

8. A linear motion mechanism with a supersonic motor comprising:

a supersonic motor for driving a rotor by vibration of a vibrating body having a piezoelectric element;

a cam cooperating with the movement of said rotor; a moving body operating in a constant direction in response to a rotation of said cam;

a plurality of guide portions for guiding the movement of said moving body;

a point of application of force by said cam provided on said moving body, said point being present on a straight line connecting said plurality of guide portions; and

a point of application of force by a pressurizing mechanism provided in a part of said moving body for imparting a contact pressure

to said cam and said moving body, said point being present on the above straight line.

9. A linear motion mechanism with a supersonic motor comprising:

a supersonic motor for driving a rotor by vibration of a vibrating body having a piezoelectric element;

a cam cooperating with the movement of said rotor;

a moving body operating in a constant direction in response to a rotation of said cam; and a point of application of force by said cam in the gravitational center of said moving body.

10. A linear motion mechanism with a supersonic motor for translating a rotational motion of the supersonic motor into a linear motion of a moving body, comprising:

a fixing and supporting member, a stator fixed to said fixing and supporting member for generating elastic vibration in a vibrating body having a piezoelectric element;

a rotor translated into the rotational motion through a frictional force by the elastic vibration of said stator;

a first pressurizing mechanism for imparting a suitable pressurizing force to said stator and said rotor;

a rotation-linear motion converting mechanism for converting the rotational motion of said rotor into the linear motion; and

a moving body portion linearly moved to and from said fixing and supporting member in accordance with the rotational motion of said rotor by said rotation-linear motion converting mechanism.

11. The linear motion mechanism with a supersonic motor

according to claim 1, characterized in that said rotation-linear motion converting mechanism comprises a guide member fixed to the fixing and supporting member;

a rotating body portion rotated together with said rotor and having a slant portion different in thickness in a circumferential direction of said rotor;

a linearly moving body portion having a projecting portion at least a part of which is brought into contact with the slant portion of said rotating body portion, said linearly moving body portion being linearly moved in thickness direction of the rotor with said guide member as a guide in accordance with the rotational motion of said rotor; and

a second pressurizing mechanism disposed such that said moving body and the linearly moving body portion come into pressing contact with said rotating body portion at a suitable pressure.

12. A linear motion mechanism with a supersonic motor for translating a rotational motion of the supersonic motor into a linear motion of a moving body, comprising:

a fixing and supporting member, a stator fixed to said fixing and supporting member for generating elastic vibration in a vibrating body having a piezoelectric element;

a rotor translated into the rotational motion through a frictional force by the elastic vibration of said stator;

a guide member fixed to the fixing and supporting member;

a rotating body portion rotated together with the rotor and having a slant portion different in thickness in a circumferential

direction of said rotor;

a linearly moving body portion having a projecting portion at least a part of which is brought into contact with the slant portion of said rotating body portion, said linearly moving body portion being linearly moved in thickness direction of the rotor with said guide member as a guide in accordance with the rotational motion of said rotor; and

a pressurizing mechanism disposed such that a suitable pressurizing force is applied to said stator and said rotor and that the linearly moving body portion and the rotating body portion come into pressing contact with each other at a suitable pressure; and

a moving member formed integrally with said rotating body portion and linearly moved to and from said fixing and supporting member in accordance with the rotational motion of said rotor.

13. Electronic equipment having the linear motion mechanism with a supersonic motor or the swing motion mechanism with a supersonic motor according to claim 1, characterized in that a load member is driven by said moving body.

14. Electronic equipment having the linear motion mechanism with a supersonic motor or the swing motion mechanism with a supersonic motor according to claim 2, characterized in that a load member is driven by said moving body.

15. Electronic equipment having the linear motion mechanism with a supersonic motor or the swing motion mechanism with a supersonic motor according to claim 3, characterized in that a load member

is driven by said moving body.

16. Electronic equipment having the linear motion mechanism with a supersonic motor or the swing motion mechanism with a supersonic motor according to claim 7, characterized in that a load member is driven by said moving body.

17. Electronic equipment having the linear motion mechanism with a supersonic motor or the swing motion mechanism with a supersonic motor according to clais 8, characterized in that a load member is driven by said moving body.

18. Electronic equipment having the linear motion mechanism with a supersonic motor or the swing motion mechanism with a supersonic motor according to claim 9, characterized in that a load member is driven by said moving body.

19. Electronic equipment having the linear motion mechanism with a supersonic motor or the swing motion mechanism with a supersonic motor according to claim 10, characterized in that a load member is driven by said moving body.

20. Electronic equipment having the linear motion mechanism with a supersonic motor or the swing motion mechanism with a supersonic motor according to claim 12, characterized in that a load member is driven by said moving body.

21. Electronic equipment having the linear motion mechanism with a supersonic motor according to claim 1, characterized in that an optical intensity to said fixing and supporting member is varied by said moving member.

22. Electronic equipment having the linear motion mechanism

with a supersonic motor according to claim 2, characterized in that an optical intensity to said fixing and supporting member is varied by said moving member.

23. Electronic equipment having the linear motion mechanism with a supersonic motor according to claim 3, characterized in that an optical intensity to said fixing and supporting member is varied by said moving member.

24. Electronic equipment having the linear motion mechanism with a supersonic motor according to claim 7, characterized in that an optical intensity to said fixing and supporting member is varied by said moving member.

25. Electronic equipment having the linear motion mechanism with a supersonic motor according to claim 8, characterized in that an optical intensity to said fixing and supporting member is varied by said moving member.

26. Electronic equipment having the linear motion mechanism with a supersonic motor according to claim 9, characterized in that an optical intensity to said fixing and supporting member is varied by said moving member.

27. Electronic equipment having the linear motion mechanism with a supersonic motor according to claim 10, characterized in that an optical intensity to said fixing and supporting member is varied by said moving member.

28. Electronic equipment having the linear motion mechanism with a supersonic motor according to claim 12, characterized in that an optical intensity to said fixing and supporting member is

varied by said moving member.